

Claim Amendments

1. (currently amended) A beverage bottling plant for filling bottles with a liquid beverage filling material, said beverage bottling plant comprising:

a filling machine configured to fill empty bottles with liquid beverage filling material;

said beverage filling machine comprising a plurality of beverage filling positions, each beverage filling position comprising a beverage filling device for filling bottles with liquid beverage filling material;

said filling devices comprising apparatus configured to introduce a predetermined flow of liquid beverage filling material into the interior of bottles to a substantially predetermined level of liquid beverage filling material;

said apparatus configured to introduce a predetermined flow of liquid beverage filling material comprising apparatus configured to terminate the filling of beverage bottles upon liquid beverage filling material reaching said substantially predetermined level in bottles;

a conveyer arrangement configured and disposed to move empty bottles to said filling machine;

a closing station configured to close filled bottles;

a conveyer arrangement configured and disposed to transfer filled bottles from said filling machine to said closing station;

a ~~labelling~~ labeling station configured and disposed to label filled bottles with a label;

a conveyer arrangement configured and disposed to transfer closed bottles from said closing station to said ~~labelling~~ labeling station;

said ~~labelling~~ labeling station comprising:

a conveyer arrangement configured and disposed to move closed bottles within said ~~labelling~~ labeling station;

said conveyer arrangement comprising a starwheel having symmetrically-shaped starwheel pockets being disposed on the periphery of said starwheel and being configured to receive bottles to be labeled;

a label storage magazine configured to hold a plurality of single-sheet labels in a stacked condition;

a label extracting and applying apparatus, with label grippers, configured and disposed to extract labels from said label storage magazine and to directly apply an extracted label on a filled, closed bottle to be ~~labelled~~ labeled disposed in a starwheel pocket of said starwheel;

a heating apparatus configured and disposed to directly heat a an extracted label, prior to finally applying the label on a filled, closed bottle, thus at least to assist in securing an

applied label to a filled, closed bottle;

each of said label grippers being substantially in the shape of a pie piece and being configured and disposed to grip an extracted label and to release a gripped label to thus permit a label to be applied to a filled, closed bottle;

~~apparatus configured and disposed to press and to smooth a label to a bottle; and~~

a conveyer arrangement configured and disposed to remove ~~labelled~~ labeled bottles from said ~~labelling~~ labeling station.

2. (currently amended) The bottling plant according to ~~claim~~ Claim 1, comprising all of: (A), (B), (C), (D), (E), and (F), ~~and (G);~~ wherein (A), (B), (C), (D), (E), and (F), ~~and (G);~~ comprise:

(A) said heating apparatus to heat a label comprises ~~at least~~ one of (I), (II), (III), (IV), and (V), wherein (I), (II), (III), (IV), and (V) comprise:

(I) at least one of: a heat radiator, a heating wire, and a heated-air blower,

(II) at least one of: an arrangement configured to produce a light beam, an arrangement configured to produce an infrared beam, and an arrangement configured to produce an ultraviolet beam,

(III) an arrangement to produce microwaves,

(IV) an arrangement to produce a laser beam, and

(V) an arrangement to produce ultrasound waves;

(B) said label grippers comprise mechanically actuable label grippers;

(C) control apparatus for controlling ~~control~~ operation of said ~~labelling~~ labeling station;

(D) ~~apparatus~~ each of said label grippers is configured and disposed to produce a vacuum;

~~—said vacuum producing apparatus is configured and disposed to permit removal of a label removed from said label storage magazine and gripping of the label to be gripped by said label grippers;~~

(E) said label extracting and applying apparatus, ~~with label grippers, configured and disposed to extract a label from said label storage magazine and to apply an extracted label~~ comprises:

a first structure;

a second structure;

~~—~~ said label grippers are mounted on said first structure;

~~—~~ said second structure is configured to receive extracted

labels from said label grippers on said first structure to permit the labels to be secured to bottles;

~~—said first structure is configured to extract a label from~~

~~said label storage magazine and to move an extracted label to
said second structure;~~

~~— said label grippers are mounted on said second structure;
and~~

~~— each of said label grippers is configured to grip a label
moved by said first structure and to release a gripped label to
permit a label to be secured to a container;~~

~~— (F) said apparatus, with label grippers, configured and disposed
to extract a label from said label storage magazine and to apply an
extracted label comprises:~~

~~— a first structure;~~

~~— a second structure;~~

said first structure has a central longitudinal axis;

said first structure is configured to rotate about said
central longitudinal axis in a substantially circular path;

said second structure has a central longitudinal axis;

said second structure is configured to rotate about said
central longitudinal axis of said second structure in a
substantially circular path; and

said heating apparatus is disposed adjacent at least one
of: said substantially circular path of said first structure, and
said substantially circular path of said second structure, to

permit heating of a label having a composition on a backside thereof; and

~~(G)(F)~~ at least one of: ~~(i)~~ and ~~(ii)~~, wherein ~~(i)~~ and ~~(ii)~~ comprise:

~~(i)~~ an arrangement configured and disposed to heat said label grippers; and

~~(ii)~~ an arrangement configured and disposed to cool said label grippers.

3. (currently amended) The bottling plant according to ~~claim~~ Claim 1, comprising at least one of: (A), (B), (C), (D), (E), and (F), ~~and (G)~~, wherein (A), (B), (C), (D), (E), and (F), ~~and (G)~~, comprise:

(A) said heating apparatus to heat a label comprises ~~at least~~ one of (I), (II), (III), (IV), and (V), wherein (I), (II), (III), (IV), and (V) comprise:

(I) at least one of: a heat radiator, a heating wire, and a heated-air blower,

(II) at least one of: an arrangement configured to produce a light beam, an arrangement configured to produce an infrared beam, and an arrangement configured to produce an ultraviolet beam,

(III) an arrangement to produce microwaves,

(IV) an arrangement to produce a laser beam, and

(V) an arrangement to produce ultrasound waves;

(B) said label grippers comprise mechanically actuatable label grippers;

(C) control apparatus for controlling ~~control~~ operation of said ~~labelling~~ labeling station;

(D) ~~apparatus~~ each of said label grippers is configured and disposed to produce a vacuum;

~~—said vacuum producing apparatus is configured and disposed to permit removal of a label removed from said label storage magazine and gripping of the label to be gripped by said label grippers;~~

(E) said label extracting and applying apparatus, ~~with label grippers, configured and disposed to extract a label from said label storage magazine and to apply an extracted label~~ comprises:

a first structure;

a second structure;

said label grippers are mounted on said first structure;

said second structure is configured to receive extracted labels from said label grippers on said first structure to permit the labels to be secured to bottles;

~~—said first structure is configured to extract a label from said label storage magazine and to move an extracted label to said second structure;~~

~~— said label grippers are mounted on said second structure;~~
and

~~— each of said label grippers is configured to grip a label
moved by said first structure and to release a gripped label to
permit a label to be secured to a container;~~

~~— (F) said apparatus, with label grippers, configured and disposed
to extract a label from said label storage magazine and to apply an
extracted label comprises:~~

~~— a first structure;~~

~~— a second structure;~~

said first structure has a central longitudinal axis;

said first structure is configured to rotate about said
central longitudinal axis in a substantially circular path;

said second structure has a central longitudinal axis;

said second structure is configured to rotate about said
central longitudinal axis of said second structure in a
substantially circular path; and

said heating apparatus is disposed adjacent at least one
of: said substantially circular path of said first structure, and
said substantially circular path of said second structure, to
permit heating of a label having a composition on a backside
thereof; and

~~(G)(F) at least one of: (i) and (ii), wherein (i) and (ii) comprise:~~

~~(i) an arrangement configured and disposed to heat said label grippers; and~~

~~(ii) an arrangement configured and disposed to cool said label grippers.~~

4. (currently amended) A ~~labelling~~ labeling station for ~~labelling~~ labeling a container, said ~~labelling~~ labeling station comprising:

a moving arrangement configured and disposed to move containers ~~by in~~ said ~~labelling~~ labeling station;

a label storage magazine;

a label extracting and applying apparatus, with at least one label gripper, configured and disposed to extract a label from said label storage magazine and to apply a label on a container to be ~~labelled~~ labeled; and

a heating arrangement ~~apparatus~~ configured and disposed to ~~directly~~ heat ~~a~~ an extracted label, prior to finally securing a label on a container, thus at least to assist in securing a label to a container; and

said at least one label gripper being substantially in the shape of a pie piece and being configured and disposed to grip a label and to release a gripped label to permit a label to be secured to a

container.

5-20. (canceled)

21. (new) The labeling station according to Claim 4, wherein said heating arrangement comprises at least one of (i) and (ii), wherein (i) and (ii) comprise:

(i) a heating apparatus configured and disposed to directly heat a label; and

(ii) an arrangement configured and disposed to heat said at least one label gripper to thus heat a label; and

an arrangement configured and disposed to cool said at least one label gripper.

22. (new) The labeling station according to Claim 21, wherein said moving arrangement comprises a starwheel having symmetrically-shaped starwheel pockets being disposed on the periphery of said starwheel and being configured to receive containers to be labeled.

23. (new) The labeling station according to Claim 22, wherein: said label storage magazine is configured and disposed to store labels having a substance on a backside thereof to permit a label to

be secured to a container.

24. (new) The labeling station according to Claim 23, wherein said heating apparatus comprises one of (I), (II), (III), (IV), and (V), wherein (I), (II), (III), (IV), and (V) comprise:

(I) at least one of: a heat radiator, a heating wire, and a heated-air blower,

(II) at least one of: an arrangement configured to produce a light beam, an arrangement configured to produce an infrared beam, and an arrangement configured to produce an ultraviolet beam,

(III) an arrangement to produce microwaves,

(IV) an arrangement to produce a laser beam, and

(V) an arrangement to produce ultrasound waves.

25. (new) The labeling station according to Claim 24, wherein one of (A) and (B):

(A) said at least one label gripper comprises a mechanically actuatable label gripper; and

(B) said at least one label gripper is configured and disposed to produce a vacuum to permit removal of a label from said label storage magazine and gripping of the label.

26. (new) The labeling station according to Claim 25, wherein said label extracting and applying apparatus comprises:

- a first structure;
- a second structure;
- said at least one label gripper is mounted on said first structure;

and

said second structure is configured to receive extracted labels from said label grippers on said first structure to permit the labels to be secured to bottles.

27. (new) The labeling station according to Claim 26, wherein:

- said first structure has a central longitudinal axis;
- said first structure is configured to rotate about said central longitudinal axis in a substantially circular path;
- said second structure has a central longitudinal axis;
- said second structure is configured to rotate about said central longitudinal axis of said second structure in a substantially circular path;
- said heating apparatus is disposed adjacent at least one of: said substantially circular path of said first structure, and said substantially circular path of said second structure, to permit heating of a label having an adhesive on a backside thereof; and

the labeling station comprises control apparatus for controlling operation of said labeling station.

28. (new) The labeling station according to Claim 4, wherein said heating arrangement comprises:

- a heating apparatus configured and disposed to directly heat a label;

- an arrangement configured and disposed to heat said at least one label gripper to thus heat a label; and

- an arrangement configured and disposed to cool said at least one label gripper.

29. (new) A method of operating a labeling station for labeling a container, said labeling station comprising: a moving arrangement configured and disposed to move containers by said labeling station; a label storage magazine; a label extracting and applying apparatus, with at least one label gripper, configured and disposed to extract a label from said label storage magazine and to apply a label on a container to be labeled; a heating arrangement configured and disposed to heat an extracted label, prior to finally securing a label on a container, thus at least to assist in securing a label to a container; and said at least one label gripper being substantially in

the shape of a pie piece and being configured and disposed to grip a label and to release a gripped label to permit a label to be secured to a container, said method comprising the steps of:

removing a label from said label storage magazine with said label extracting and applying apparatus;

gripping a label with said at least one pie-piece-shaped label gripper;

heating a label with said heating arrangement, prior to finally securing a label on a container, thus at least to assist in securing a label to a container;

releasing a gripped label from said at least one pie-piece-shaped label gripper to thus permit a label to be applied to a container; and
applying a heated label on a container.

30. (new) The method of operating a labeling station according to Claim 29, wherein said label storage magazine is configured and disposed to store labels having a heat-activatable adhesive on a backside thereof to permit a label to be secured to a container, said method comprising the steps of:

storing labels having a heat-activatable adhesive on a backside thereof in said label storage magazine;

said step of removing a label from said label storage magazine

comprises removing a label having a heat-activatable adhesive on a backside thereof;

said step of gripping a label with said at least one label gripper comprises gripping a label having a heat-activatable adhesive on a backside thereof;

said step of heating a label with said heating arrangement, prior to finally securing a label on a container, thus at least to assist in securing a label to a container, comprises heating a label having a heat-activatable adhesive on a backside thereof;

said step of releasing a gripped label from said at least one label gripper to thus permit a label to be secured to a container, comprises releasing a label having a heat-activatable adhesive on a backside thereof; and

said step of applying a heated label comprises applying a label having a heated adhesive on a backside thereof on a container to be labeled.

31. (new) The method of operating a labeling station according to Claim 30, wherein at least one of (i) and (ii):

(i) said heating arrangement comprises a heating apparatus configured and disposed to directly heat a label; and

said step of heating a label with said heating arrangement

comprises directly heating the heat-activatable adhesive with said heating apparatus;

(ii) said heating arrangement comprises:

an arrangement configured and disposed to heat said at least one label gripper to thus heat a label and the heat-activatable adhesive thereon; and

an arrangement configured and disposed to cool said at least one label gripper; and

said method further comprises the steps of:

heating with said heating arrangement said at least one label gripper to thus heat a label and the heat-activatable adhesive thereon; and

cooling with said cooling arrangement said at least one label gripper upon said at least one label gripper being heated and after release of a label being gripped by said at least one label gripper.

32. (new) The method of operating a labeling station according to Claim 31, wherein said moving arrangement comprises a starwheel having symmetrically-shaped starwheel pockets being disposed on the periphery of said starwheel and being configured to receive bottles to be labeled.

33. (new) The method of operating a labeling station according to Claim 32, wherein said heating apparatus comprises one of (I), (II), (III), (IV), and (V), wherein (I), (II), (III), (IV), and (V) comprise:

(I) at least one of: a heat radiator, a heating wire, and a heated-air blower,

(II) at least one of: an arrangement configured to produce a light beam, an arrangement configured to produce an infrared beam, and an arrangement configured to produce an ultraviolet beam,

(III) an arrangement to produce microwaves,

(IV) an arrangement to produce a laser beam, and

(V) an arrangement to produce ultrasound waves.

34. (new) The method of operating a labeling station according to Claim 33, wherein one of (A) and (B):

(A) said at least one label gripper comprises a mechanically actuatable label gripper to permit removal of a label from said label storage magazine and gripping of the label; and

(B) said at least one label gripper is configured and disposed to produce a vacuum to permit removal of a label from said label storage magazine and gripping of the label;

said step of removing a label from said storage magazine comprises removing a label by generating a vacuum sufficient to

remove a label from said label storage magazine; and

said step of gripping a label comprises maintaining the vacuum to grip the label.

35. (new) The method of operating a labeling station according to Claim 34, wherein:

said label extracting and applying apparatus comprises:

a first structure;

a second structure;

said at least one label gripper is mounted on said first structure;

said second structure is configured to receive extracted labels from said label grippers on said first structure to permit the labels to be secured to bottles;

said first structure has a central longitudinal axis;

said first structure is configured to rotate about said central longitudinal axis in a substantially circular path;

said second structure has a central longitudinal axis; and

said second structure is configured to rotate about said central longitudinal axis of said second structure in a substantially circular path;

said heating apparatus is disposed adjacent at least one of: said

substantially circular path of said first structure, and said substantially circular path of said second structure, to permit heating of a label having an adhesive on a backside thereof;

said labeling station comprises control apparatus for controlling operation of said labeling station; and

said method further comprises the step of controlling with said control apparatus operation of said labeling station, including said heating arrangement.

36. (new) The method of operating a labeling station according to Claim 30, wherein:

said heating arrangement comprises:

a heating apparatus configured and disposed to directly heat a label;

an arrangement configured and disposed to heat said at least one label gripper to thus heat a label and the heat-activatable adhesive thereon; and

an arrangement configured and disposed to cool said at least one label gripper;

said step of heating a label with said heating arrangement comprises the steps of:

heating said at least one label gripper to thus heat a label

and the heat-activatable adhesive thereon;

directly heating the heat-activatable adhesive with said
heating apparatus to further heat the heat-activatable adhesive;
and

cooling with said cooling arrangement said at least one
label gripper upon said at least one label gripper being heated
and after release of a label being gripped by said at least one
label gripper.